

REMARKS

The Office Action dated December 7, 2010 has been reviewed carefully and the application has been amended in a sincere effort to place it in condition for allowance. The amendment is being filed pursuant to 37 CFR § 1.114 with a Request for Continued Examination. All objections and rejections are respectfully traversed.

Claims 30, 31, 33 - 48 are pending in the application. New claims 50 and 51 were added to better claim the invention.

CLAIM REJECTIONS

Claim 30 was rejected to based on an informality. Claim 30 has been amended to correct the typographical error noted by the Examiner.

Claim Rejections – 35 U.S.C. §103

Claims 30-31 and 33-48 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Published Patent Application 2002-0095269 to Natalini et al. (“Natalini”) in view of U.S. Patent No. 6,453,687 to Sharood et al. (“Sharood”), and further in view of U.S. Patent No. 5,960,234 to Shibaki et al. (“Shibaki”).

Briefly, Applicant’s invention is an electric appliance monitoring device that monitors a plurality of electrical and physical quantities which are representative of the state and/or operation of the appliance. The exemplary embodiment of the appliance described in the Specification is that of a washing machine. Applicant’s invention involves employing a monitoring system to analyze the operation and state of the monitored electrical appliance(e.g., a washing machine). The system measures internal physical quantities and external physical quantities as well as electrical quantities that

are representative of the operation of the electrical appliance at a given point in time.

The physical and electrical quantities are measured by a combination of physical internal sensors, physical external sensors and electrical sensors. The sensors are placed throughout the appliance and the appliance fittings. The external physical quantities are measured at external sensors that are positioned at external locations, such as the appliance fittings. For example, in the case of a washing machine, a flow sensor may be positioned along an inlet pipe and the sensor is adapted to measure the water flow rates into the washing machine. This measurement is taken externally in order to isolate it from water and vibrations within the washing machine drum, which may interfere with the accuracy of the measurements of the flow rate. A conductivity sensor is positioned in the drain pipe of the washing machine to measure the conductivity of the washing liquid drained from the washing machine in order to detect, for example, the presence of any detergent residues in the washing liquid. As noted, the external placement isolates the sensor from vibrations, and/or water that remains in the washing machine. These external sensors transmit detected data through a dedicated communication network that is external to the washing machine.

Many other sensors may be associated with the Applicant's invention, for example, internal sensors, such as a weight sensor. The internal sensors are connected to an electronic control means on the washing machine and each sensor transmits detected data through a communication network.

The sensors allow a user to oversee the operation of the household appliance based on the data detected by the sensors.

Turning to the Natalini reference, which is assigned to a common assignee as the

present invention, Natalini describes a system for monitoring and servicing appliances. More specifically, a number of appliances are coupled to a common bus 40. A gateway sends information to a remote center 50 which in turn sends information to service centers 52, 54 and to the user. Fig. 2 illustrates a washing machine 18 and a refrigerator 14. *See* Page 4, Paragraph [0040]. The sensors 114 to 128 in Fig. 2 appear to be within the appliance, and not external to the appliance. Further, an adapter measures electrical quantities. Applicant's sensors include internal physical sensors, external physical sensors and electrical sensors.

By using internal, external and electrical sensors, Applicant's system is able to monitor operations of the appliance using the most appropriate combination of data. As discussed, monitoring the appliance while draining may be best characterized by a combination of the sensing of external flow rate, internal valves state and an electrical quantity appropriate for the draining operation, such as the end of an agitation cycle. Using a combination of data from all three sensors provides more information than measuring only internal and electrical quantities (e.g., water valve and end of agitation) which would not, for example, detect leaking fittings.

Applicant's invention has a monitoring device 9, which is in close communication with the washing machine 1. External water sensors, i.e., flow sensor 93 and conductivity sensor 94, are directly coupled to the interface 7 on the monitoring device 9 by a dedicated network that is external to the washing machine. In another embodiment, the dedicated external network that connects sensors 93 and 94 with the monitoring device 9 is wireless. Either way, the water sensors, being located outside of the appliance, are isolated from variations that may be caused by the washing machine's

operation, e.g., from vibrations caused by a drum rotation during a wash cycle.

The Examiner indicated that the refrigerator specified by Natalini provides for external sensors, citing Paragraph 35 of Natalini, which discusses a sensor for ambient temperature. However, Natalini expressly teaches such external measurements constitute “environmental information.” In contrast, Applicant’s external physical sensors measure quantities that correspond directly to appliance operation, such as conductivity of the water in a drainage conduit, which is not an environmental factor.

Further, Natalini does not disclose, teach or suggest the dedicated external communications network of Applicant’s claimed invention. Moreover, Natalini does not teach a synergy between internal physical sensors, external physical sensors and electrical sensors working together to provide a highly accurate detailed snapshot of the appliance at an instant in time as taught by Applicant.

Absent these key features of Applicant’s invention, it is respectfully submitted that Natalini alone does not render Applicant’s invention obvious.

Turning to the Sharood reference, as noted in earlier prosecution, Sharood specifies a retro-fit plug 125, shown in Figs. 6A-6D. The plug-through device 125 is attached in-line with the main appliance electrical power supply or internally in-line with a main control board interface of an appliance 130. Col. 8, Lines 14-24. The Sharood reference measures electrical data and as such the system cannot detect values for internal physical quantities, such as agitation, weight and the like, nor can it detect external physical quantities such as flow rate and conductivity. This is in contrast to Applicant’s system which includes many different types of sensors. Moreover, while Sharood discusses making holes in the appliance to insert sensor, such teaching is contrary to

normal appliance usage, and thus is not a teaching that renders Applicant's invention obvious appliance.

The combination of Sharood and Natalini adds to Natalini a plug through device that measures electrical information. The combination does not render Applicant's invention obvious because even when combined the two references do not describe a monitoring system that has an external dedicated communication network between the monitoring device and one or more external sensors that measure physical quantities. Additionally, Sharood combined with Natalini does not teach a combination of internal, external and electrical measurements.

As neither reference, alone or in combination discloses, teaches or suggest these features, it is respectfully submitted that Natalini combined with Sharood does not render Applicant's invention obvious.

The Examiner found that the Natalini and Sharood combination does not explicitly disclose the storing of the last measured value of at least one physical quantity causing the deletion of the first measured value. The Examiner indicates that the Shibaki reference discloses the storing of newly generated data causing the deletion of the oldest data. *See* Col. 6, lines 58-60.

Applicant respectfully submits that the Shibaki reference, which relates to a time/distance display apparatus for use with a photocopy/image forming machine, is in a separate field of endeavor. Thus, there is no motivation to combine the Shibaki reference with the Sharood and Natalini references.

Furthermore, the Shibaki reference discusses "attribute data" and "time data." The "attribute data" is related to user-selected attributes in a particular copy job, such as

keyed in values of one-sided, both sides, coded data, and original size, such as letter and A4 paper, and so forth. Col. 3, Line 56 to Col. 4, Line 31. The “time data,” is learned data that is used to provide to a user an expected time of completion of the print job that the user keyed into the machine. This does not constitute monitoring of the operation of the appliance.

Thus, the Shibaki attribute data and time data together relate to the expected finish time of the selected function of the machine and do not provide for measurement of physical internal, external and electrical quantities related to monitoring the workings of the machine. Furthermore, Shibaki does not teach an external sensor or an external dedicated communication means, as in Applicant’s invention. Rather, Shibaki teaches the electric circuit of Fig. 2 showing a console panel of the image forming apparatus. The function keys for the user’s input are on the console. Col. 3 Lines 14 – 30.

Furthermore, with respect to the storage of data, Shibaki teaches that: “if the memory has the same attribute data as the newly generated attribute data, the time data corresponding to the attribute data in the memory is replaced by the newly generated time data.” Col. 6, lines 54 – 57. Thus, Shibaki teaches storing only new time data and replacing older time data for the say type of copy job. In contrast, Applicant’s invention does not replace data, but instead stores as much data including a plurality of measurements as set forth in Claim 1. Applicant’s system thus allows for historical analysis of the measured data, which is not shown in Shibaki. For example, Shibaki’s data report new expected times for job completion, but does not tell how the time for completing that same job has changed over time.

The combination of Natalini, Sharood and Shibaki still does not give rise to

Applicant's invention. As noted Natalini describes sensors that are internal to the appliance. Shibaki describes recording attribute data and time data to provide the user with information about the expected time of completion of a job. These two teachings combined with Sharood's retrofit plug device do not render Applicant's invention obvious because none of the references taken alone or in combination teaches internal physical sensors, external physical sensors and electrical sensors working together to provide a comprehensive snap shot of quantities measured during appliance operation. In addition, the quantities can also be stored in a manner that allows for analysis of historical information. Additionally, the combination contains no concept of Applicant's dedicated external communication network which obtains information from its external physical sensors. The combined references do not disclose, teach or suggest these key features of Applicant's invention.

Accordingly, it is respectfully submitted that the claimed invention is patentable over the cited references.

SUMMARY

All of the claims have been amended herein either directly or through dependency in order to clarify the distinctions that the present invention has over the cited references, and to better claim the invention.

All independent claims are believed to be in condition for allowance. All dependent claims are dependent upon allowable independent claims, thus they are also believed to be in condition for allowance.

Should the Examiner deem that a telephonic interview will further the prosecution of the invention, please contact the undersigned at your convenience.

Please charge any additional fee occasioned by this paper to our Deposit Account
No. 03-1237.

Respectfully submitted,

/Rita M. Rooney/
Rita M. Rooney
Reg. No. 30,585
CESARI AND MCKENNA, LLP
88 BLACK FALCON AVENUE
BOSTON, MA 02210
Telephone: (617) 951-2500
Facsimile: (617) 951-3927